

**REPLACED BY  
ART 34 AMDT**

**Description**  
**A Plastic single-piece Tube**

**Technical Field**

The invention relates to a single-piece tube made of plastic. For some time plastic tubes have been used in substitution for metal tubes, especially in the technical field of tubes destined to contain fluid products such as creams or in general cosmetic products.

**5   Background Art**

The tubes in this field usually include a central body having a lower part which is open for the introduction of the product, and which is closed after the filling operation. The upper part of the central body has a passage for the exit of the product from the tube. These tubes are made by either welding the upper part to  
10   a drawn cylindrical tube, or by directly moulding the whole tube by injection of plastic material in a special die. The present invention relates in particular to the latter type of tube.

The finished tube is sent to producers of the product destined to fill the tube by introduction into the open lower part, whereupon the bottom of the tube is  
15   welded, the top of the tube is closed by a cap, usually screwed on by means of a thread located at the opening, which the user will then unscrew to access the product, and rescrew to seal the tube until next use.

As with all objects whose unit cost is relatively low but which are produced in large numbers, the main problem the producers face is how to limit costs and  
20   production times, by limiting the number of separate parts needed to make the object and by reducing to a minimum production waste. A further problem faced

### Claims.

- 1). A plastic single-piece tube, comprising a trunco-conical body (1a) having a lower part (1b) which is open for introduction of a product and closeable after the introduction, and an upper part (1c) provided with a passage for exit of the product, wherein the tube comprises a cap (3) which can be applied on the upper part (1c) of the tube for closing the passage, which cap (3) is connected to the upper part (1c) of the tube by a hinge element (4); at least the upper part (1c) of the tube, the cap (3) and the hinge element (4) being made in a single piece obtained by injection moulding.
- 2). The tube of claim 1, wherein the upper part (1c) and the cap (3) are conformed in such a way that the cap (3) applied on the upper part (1c) is a continuation of the trunco-conical body (1a) of the tube.
- 3). The tube of claim 1, wherein the whole tube, together with the cap (3), is made in a single piece by multiple injections of plastic material into a mould.
- 4). The tube of claim 3, wherein the hinge element (4) and the cap (3) are made by injection of plastic material of different colours with respect to a colour used for a remaining part of the tube.
- 5). The tube of claim 1, wherein the upper part (1c) of the tube and the cap (3) are slightly thicker than the trunco-conical body (1a) of the tube.
- 6). The tube of claim 1, wherein in a brief tract of the tube situated between the upper part (1c) and the remaining part of the tube internal thin ribs (5) are fashioned.
- 7). The tube of claim 1, wherein the hinge element (4) comprises a flat band (4) which connects an intermediate zone to the upper part (1c) of the tube to a free edge (3a) of the cap (3).

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- 8). The tube of claim 1, wherein: the passage afforded on the upper part (1c) of the tube comprises a cylindrical hole (2) which opens conically towards an outside and is arranged coaxially to the tube (1); the cap (3) comprises a cylindrical projection (3b), fashioned on an internal bottom of the cap (3), which is conformed and arranged in such a way as to insert sealingly in the cylindrical hole (2) when the cap (3) is applied on the upper part (1c) of the tube.
- 9). The tube of claim 1, wherein a coning angle of the trunco-conical body is comprised between  $1^{\circ}$  and  $4^{\circ}$ .
- 10). The tube of claim 2, wherein on a lateral wall of the upper part (1c) of the tube a recess (1d) is afforded, made at a diametrically-opposite position to the hinge element (4) which, when the cap (3) is applied on the upper part (1c) of the tube, reveals a brief tract (3c) of cap (3).